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Microstructural approach in addressing the issue of repeated use of TFE-fluorocarbon additives and its influence on car engines

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The paper considers some aspects of TFE-fluorocarbon additives application in lubrication systems of internal combustion engines (ICE), their influence on processes of friction and wear during multiple uses. Working surfaces of different parts of ICE were observed by means of scanning electron microscope (SEM) at high resolution. Polymeric protective coating are formed on the metal and non-metal surfaces. TFE-fluorocarbon additives' particles severely deform are severely deformed during operating, changing their initial spherical shape to elongated and needle-like shapes. The overabundance of these deformed polymer particles leads to a state when they become a major source of wear products formation instead of protecting engine friction units and reducing wear. The results indicate that repeated use of FORUM additive in the lubrication system of internal combustion engines may cause gumming of the piston rings.